

Anatomical Exploration of “Kukkutasana”

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The *Gheranda Samhita* is the most encyclopaedic of the three-classic text about *Asana*. It says that there are 8,400,000 of *Asana* described by *Shiva*. The postures are as many in number as there are numbers of species of living creatures in this universe. Among them 84 are the best, and among these 84,32 have been found useful for mankind in this world the 32 *Asana* are mentioned in *Gheranda Samhita*.¹

The *Kukkutasana* word comes from the Sanskrit word “*Kukkuṭ*” meaning cock and “*Asana*” meaning posture. Hence, a posture in which the body of the practitioner is shaped like a cock is called “*Kukkutasana*”.²

Need of Study- In the contemporary time, everybody has conviction about *Asana* practices towards the preservation, maintenance and promotion of health. But the lacuna of anatomical explanation of structures involved and their role in benefit achieved is still persisting.

The knowledge of anatomy will also help the *Asana* practitioners, to avoid injuries.

In this article the essential quest of *Asana* practitioner about the anatomical structures involved in the *Asana* and how this involvement is beneficial in maintaining health or in management of any disease.

Aim and Objectives -

- To explore the anatomical structures involved in “*Kukkutasana*.”

ABSTRACT

Yoga is derived from the Sanskrit term ‘Yuj’ meaning to bind, join, attach and yoke, to direct and concentrate one’s attention on, to use and apply. It also means union or communion. It is the true union of our will with the will of God. *Yoga* is performed through some specific postures called *Asana*. Among the eight limbs of *Yoga*, the yogic technique properly begins at the third limb that is the *Asana*. The word *Asana* is well known around the world for the yogic posture into which the whole science of *Yoga* is shrinking. Patanjali defines *Asana* as ‘*Sthirasukhatvam*’ in *Yogasutra* which can be translated as stable and agreeable. The benefits of *Asana* range from physical to spiritual level. *Asana* not only tone the muscles, ligaments, joints and nerves but also maintains the smooth functioning and health of entire body. “*Kukkutasana*” was described as one of the 32 most important *Asana* in *Gheranda Samhita*. In Sanskrit “*Kukkuṭ*” means Cock or Rooster and “*Asana*” means sit, Pose or Posture. *Kukkutasana* or cock Pose is named so since it looks like a cock. In this article anatomical structures involved in the “*Kukkutasana*” and how this involvement is beneficial in maintaining the health or in management of any disease is explained.

KEYWORDS: Anatomy, *Asana*, Joint, *Kukkutasana*, Muscle, *Yoga*

INTRODUCTION

“*Kukkutasana*” was described as one of the 32 most important *Asana* in *Gheranda Samhita* (dated around 1650 CE).

- To avoid possibilities of injuries while performing *Kukkutasana* by understanding the anatomical structures involved in “*Kukkutasana*”.

Material and Methods -

- Review of *Yoga-Asana* literature from *Yoga* Classics including relevant commentaries.
- Other print media, online information, journals, magazines etc.

Review- According to Hath Yoga Pradipika-

पद्मासनं तु संस्थाप्य जानूर्वोरंतरे करौ निवेश्य भूमौ संस्थाप्य व्योमस्थं
कुक्कुटासनम् || (हठयोगप्रदीपिका १/२५)

Taking the posture of *Padmasana* and carrying the hands under the thighs, when the Yogi raises himself above the ground, with his palms resting on the ground, it becomes *Kukkutasana*.

According to Gheranda Samhita-

पद्मासने समासाद्य जानूर्वोरंतरे करौ कर्पूराभ्याम समासीन उच्चस्थः कुक्कुटासनम् || (धेरंड
संहिता २/३१)

In *Gheranda Samhita* Sitting on the ground, cross the legs in the *Padmasana* posture, trust down the hands between the thighs and the knees. stand on the hands, supporting the body on the elbows. This is called the Cock-posture.

According to Hath Ratnawali-

पद्मासनं सुसंस्थाप्य जानूर्वोरंतरे करौ निवेश्य भूमौ संस्थाप्य व्योमस्थः कुक्कुटासनम् ||
(हठ रत्नावली ३/७३)

The practitioner adopts *Padmasana* and inserts the arms between the knees and the thighs and then firmly places the

palms on the ground and suspends oneself raising above the ground.

In Vasistha Samhita and Hathratnavali –

पद्मासनं समास्थाय जानूवरन्तरे करौ भूमौ निवेश्य संस्थाप्य व्योमस्थं

कुक्कुटासनम् || (वशिष्ठ संहिता १/७८)

Kukkutasana described similar as *Hath Yoga Pradipika*, Adopt *Padmasana*, insert hands in between the knees and thighs and fixing the palms on the ground and suspending oneself is known as *Kukkutasana*.

According to Swami Satyananda Saraswati- Sit in *Padmasana*. Insert the hands between the calves and thighs, near the knees. Gradually push the arms through the legs up to the elbows. Place the palms of the hands firmly on the floor with the fingers pointing forward. Keeping the head straight and the eyes fixed on a point in front, raise the body from the floor, balancing only on the hands. Hold the back straight. Remain in the final position for as long as is comfortable. Return to the floor and slowly release the arms, hands and legs. Change the leg position and repeat the pose.

Steps for Performing “*Kukkutasana*”³

1. Sit in *Padmasana*.
2. Insert the hands between the calves and thighs, near the knees.
3. Gradually push the arms through the legs up to the elbows.
4. Place the palms of the hands firmly on the floor with the fingers pointing forward.
5. Keeping the head straight and the eyes fixed on a point in front, raise the body from the floor, balancing only on the hands.
6. Hold the back straight.
7. Remain in the final position for as long as is comfortable.
8. Return to the floor and slowly release the arms, hands and legs.

Image:



Anatomical Exploration of *Kukkutasana*- Muscles and ligaments involved in *Kukkutasana*.

Ankle and foot region-

Ankle is plantar flexed and foot is inverted.

The muscles stretched in *Kukkutasana* are similar to *Padmasana* and *Siddhasana*. But in *kukkutasana* the position of foot is at a higher level compared to *Siddhasana* and there is more stretching happening in ankle joint. Ankle joint is plantar flexed and inverted. Muscles which produce plantar flexion are gastrocnemius, soleus and it is assisted by the

Plantaris, tibialis posterior, flexor hallucis longus and flexor digitorum longus. Feet are inverted by tibialis anterior and posterior. The muscles of anterior compartment of leg are stretched here.

The big toe is being held by the hand from back; hence the interphalangeal and metacarpophalangeal joints of big toe are also flexed. This stretches the extensor hallucis brevis muscle. The anterior compartment of leg comprises of extensor digitorum longus, extensor hallucis longus, tibialis anterior and peroneus tertius. These muscles are supplied by deep peroneal nerve (L4-S1). Peroneus longus and brevis belong to lateral compartment of leg, which is supplied by superficial peroneal nerve (L5-S2).

Extensor hallucis brevis belongs to the dorsum of foot. Both are supplied by the lateral terminal branches of the deep peroneal nerve (S1-S2).

Ligaments of ankle joint

The foot is inverted hence the lateral collateral ligaments are stretched here these, includes

1. Anterior talofibular ligaments (ATFL)
2. Posterior talofibular ligaments (PTFL)
3. Calcaneofibular ligament

Knee Joint

Knee joint is flexed and Leg laterally rotated. The muscles involved are similar to that of *Siddhasana* but there is more stress on knee joint. As the position of ankle is higher compared to *Siddhasana*, there is more lateral rotation and stress on the ligaments is high. The muscles are more stretched especially the medial rotators of knee. In *Padmasana* the extensor compartment or anterior compartment of thigh and the medial rotators of knee are stretched. This compartment consists of quadriceps femoris which includes rectus femoris, vastus lateralis, medialis and intermedius. All these muscles are supplied by femoral nerve (L2-L4). Semitendinosus and Semimembranosus are the medial rotators of knee and hence stretched in *Padmasana*. These are part of hamstring and belong to posterior compartment of thigh. They are supplied by Sciatic nerve (L5-S1).

Ligaments of knee joint

Knee joint is flexed and Leg laterally rotated.

The ligaments of knee joint are under maximum stretch and stress in *Padmasana*. The chances of ligament tear are more common in this Asana and are not advisable to practice *Padmasana* without attaining needed flexibility. In this position the maximum pressure is on the following ligaments

1. Lateral collateral or fibular collateral ligament. (LCL)
2. Anterior cruciate ligament (ACL)
3. Posterior cruciate ligament (PCL)

Medial and lateral meniscus

LCL can be injured during both flexion and external rotation of the knee. In lateral rotation, the ACL is lengthened and stretched over the PCL. There is a possibility that the ACL can tear when the knee is flexed and either internally or externally rotated. Of the two menisci, the medial meniscus is the one most commonly torn. One of the most common ways to tear the meniscus is to rotate a completely flexed knee

Pelvis and Hip region

The hips are flexed, abducted and externally rotated. Kukkutasana places more stress on hip joint compared to Siddhasana. As the knee joint is a hinge type of synovial joint, the placement of feet on thighs forces the hip joint into extreme lateral rotation, and with the initial flexion and abduction it places the hip joint in a stressed and unusual position.

During the abduction of hip joint the adductors are under a lot of stretch. The adductor compartment or medial compartment comprising of gracilis, adductor longus, magnus and brevis thus gets stretched. The muscles of this compartment are supplied by obturator nerve (L2-L4). Adductor magnus being a hybrid muscle is also supplied by the Sciatic nerve (L4). The pectineus adducts and internally rotates the hip. Hence, it's stretched in this pose. It is supplied by femoral nerve (L2, L3).

In Kukkutasana to keep the hip joint in its position the abductors, external rotators and the flexors will be in active contraction. Majority of this muscles are present in the gluteal region. The sartorius muscle, apart from flexing the knee synergizes the tilt of the pelvis while aiding to abduct and externally rotate the hip. Tensor fascia Lata is continuously active in strong lateral rotation of the thigh and upper fibres are active in powerful abduction of the thigh. It's supplied by superior gluteal nerve. Gluteus Medius and minimus are abductors and helps in medial rotation. These are supplied by Superior gluteal nerve (L4-S1). The six small lateral rotators of the hip are piriformis, gemellus superior, gemellus inferior, obturator externus, obturator internus, and quadratus femoris. These muscles help in abduct the flexed thigh. Nerve to obturator internus (L5, S1) supply obturator internus and gemellus superior. Nerve to quadratus femoris (L5, S1) supplies quadratus femoris and gemellus inferior muscles. Piriformis is supplied by Branches of anterior rami of S1, S2 and obturator externus by obturator nerve. The psoas major along with iliacus helps in flexing and external rotation of hip. Psoas major is supplied by lumbar spinal nerve (L2, L3) and iliacus by femoral nerve

Ligaments of hip joint

The hips are flexed, abducted and externally rotate. This position is similar to Siddhasana but the external rotation is more and it puts more pressure on ligaments.

The ligaments more stretched are

1. Ischiofemoral ligament
2. Pubofemoral ligament

The Spine: Thoracic and Lumbar

The lumbar and thoracic spines are erect. Similar to Siddhasana to maintain an upright shape, the erector muscles contract to extend the spine, and the psoas muscles contract to pull the anterior lumbar spine forward. Since the hands are crossed at the back to catch hold of the toes, there is more straightening of the spine especially the thoracic region. There is a tendency of the spine to move in posterior direction and hence to counter that there is more stress on psoas major muscles to maintain the upright posture. The abdominal muscles also resist the spinal extension and the contract to stabilize the trunk.

The erector spinae are the largest muscle mass of the back, forming a prominent bulge on either side of the vertebral

column. It is the chief extensor of the vertebral column. It consists of three groups: iliocostalis (laterally placed), longissimus (intermediately placed), and spinalis (medially placed). The lumbar and thoracic group of erector spinae muscles are contracted to keep the spine straight. These muscles are supplied by the dorsal rami of lumbar and thoracic spinal nerves.

Quadratus lumborum act as synergist to the function of erector spinae and helps in maintaining lumbar lordosis.

Cervical Region

Cervical spine flexed. Sternocleidomastoid acting together draws the head forwards and so help to flex the cervical part of the vertebral column and it is important in creating the lock formed in Jalandhara Bandha. Rectus capitis anterior, longus capitis and longus colli flexes the head at the Atlanto-occipital joints. Rectus capitis anterior is innervated by branches from the loop between the ventral rami of the first and second cervical spinal nerves. Longus capitis is innervated by branches from the ventral rami of the first, second and third cervical spinal nerves. Longus colli is innervated by branches from the ventral rami of the second, third, fourth, fifth and sixth cervical spinal nerves.

The upper fibres of Trapezius are stretched most. The other muscles stretched are splenius capitis, splenius cervicis, semispinalis capitis and longissimus capitis. The latter two are part of erector spinae muscle. These muscles help to extend the head and are stretched in this case. The suboccipital muscles are rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis inferior and obliquus capitis superior are involved in extension of the head at the Atlanto-occipital joints and rotation of the head and atlas on the axis.

Shoulder joint extended, abducted and medially rotated

Extension of shoulder joint is mainly done by Posterior fibres of deltoid, Latissimus dorsi. Accessory muscles are Teres major, long head of triceps and Sternocostal head of the pectoralis major. Abduction of shoulder joint is done by Deltoid, Supraspinatus, Serratus anterior, Upper and lower fibres of trapezius. Medial rotation of shoulder joint is done by Pectoralis major, anterior fibres of deltoid, Latissimus dorsi, Teres major and assisted by the Subscapularis.

The pectoralis major muscle is the flexor of shoulder joint and upper fibers help in abduction. It's stretched when the shoulder joint is extended. It's supplied by lateral pectoral (C5-C7) and medial pectoral nerve (C8-T1). The extensors are slightly stretched in this position. The extensors include the latissimus dorsi and teres major. Latissimus dorsi is the extensor, adductor and medial rotator of shoulder joint. Teres major is an extensor and also a medial rotator.

Elbow joint flexed and pronated

Elbow region

Flexion is brought about by the brachialis, the biceps, and brachioradialis. Pronation is brought about chiefly by the pronator quadratus. It is aided by the pronator teres.

The upper limb is kept straight, hence the elbow is extended. To maintain this position Triceps brachii is actively contracted. Since the forearm is also supinated, the supinator's are actively contracted. Biceps brachii supplied by musculocutaneous nerve and supinator supplied by posterior interosseous nerve are actively contracted.

Most Stretched Structures in Kukkutasana

1. Vastus Lateralis
2. Vastus Medialis
3. Rectus Femoris
4. Vastus Intermedialis
5. Flexor digitorum longus
6. Flexor ulnaris

Benefits- It strengthens arms and chest, improves digestion and liver; removes fat from hands and feet and make them strong. Destroy the worms of the stomach.⁴The practice of this Asana makes the hands, the arms, and the forearms as well as the elbows extremely strong. The Asana is particularly useful for gunners and riflemen and for all those who have to use their arms. The practice of this Asana combats laziness, helps to carry on with little sleep, and early rising becomes easy. The yogis have remarked that the practice of the Cock posture is bound to be more rewarding than the practice of eating cocks! The practice of the Asana makes the body firm. Persons with weak and narrow chests or with crooked arms must practice it. Those who develop tremors or cramps while writing, or those who get easily tired, should also practice this Asana. It has been held to be useful for all: householders, mendicants, yogis, soldiers, policemen, farmers, and musicians.⁵

This posture strengthens the arm and shoulder muscles and stretches the chest. It loosens up the legs and develops a sense of balance and stability. It is used in the process of Kundalini awakening due to the stimulation of Mooladhara chakra.

The intestines are purified, the fat of the lower abdomen dissolved, and diseases affecting the bowels and urinary tract, as well as excess phlegm, are cured. This cures constipation (Malabaddata). Additionally, urine problems are alleviated and the urethra cleansed. The muscles of the arms and shoulders are strengthened.⁶

Discussion

The basic joint position in Kukkutasana are the ankles plantar flexed, feet are inverted, knees flexed and leg laterally rotated, and hips are flexed, abducted and externally rotate. The lumbar and thoracic spine extended, cervical spine flexed, shoulder joint extended, internally

rotated and adducted, The Elbows are in flexed and prone position. Kukkutasana stretches entire upper body including the stomach, chest, arms and shoulder. This helps in smooth flow of blood to these areas which strengthen and tone the muscles. Cockerels pose tone biceps and triceps muscles with its regular practice. In the Asana, entire body weight is on arms which not only increases blood circulation but keeps them toned. With the increased blood flow, the muscles get the required nutrition that results in their growth.

Conclusion

In *Kukkutasana*, after taking the posture of *Padmasana* and carrying the hands under the thighs, when the Yogi raises himself above the ground, with his palms resting on the ground. In *Kukkutasana* wrist joint, shoulder joint, ankle joint and knee joint are under more stress. The muscles of flexor compartment of forearm, anterior compartment of arm, the anterior compartment of leg, anterior and medial compartment of thigh is stretched the most. This helps in smooth flow of blood to these areas which strengthen and tone the muscles. Dorsal radioulnar ligament, dorsal radiocarpal ligament, dorsal radial metaphyseal arcuate ligament has chances of tear if this Asana done under incorrect position.

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